

# PERFLUORINATED CHEMICALS AND ANOGENITAL DISTANCE: PRELIMINARY APPROACH

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**Background and aims:** Perfluorooctanesulfonate (PFOS) and perfluorooctanoate (PFOA) are man-made, widespread persistent organic pollutants. Although they have been related to deleterious effects towards fetal growth in animals, the evidence on human effects is scarce (1, 2).

Anogenital distance (AGD) is an anthropometric measurement that has been taken to the newborns, and it is widely known as a marker of exposure to hormonal disrupters for animals. AGD would be a sensitive quantitative marker of disruptors exposure and could eventually be used as a risk factor measurement for endocrine-related dysfunctions (such as sterility) (3). The hypothesis of this study is that PFOS/PFOA could act as hormone disruptors and therefore lead to a modified AGD.

**Methods:** 10 newborns with the lowest AGD mean ( $33.63 \pm 2.16$  mm) and the 10 newborns with the highest AGD mean ( $50.64 \pm 3.89$  mm) went through analysis of levels of PFOS/PFOA. Moreover, this preliminary study provided the opportunity to validate an automatic method for PFOS analysis, which consists on liquid chromatography associated with masses spectrometry.

**Results:** The mean levels were 2059 ( $\pm 1567$ ) ng/ml for PFOS and 914 ( $\pm 3449$ ) ng/ml for PFOA. When AGD was divided into lowest and highest categories, the lowest AGD group had higher levels (ng/ml) of PFOS (2517, 95% CI 1332 - 3702, versus 1600, 95% CI 594 - 2607,  $p = 0.19$ ). Unconsistent results were find for PFOA analysis ( $115 \pm 45.3$  ng/ml for the lowest versus  $1802 \pm 5008$  ng/ml for the highest AGD mean group,  $p = ns$ ).

**Conclusions:** These preliminary results suggest that PFOS levels could be associated to anogenital distance. Levels of PFOS/PFOA were comparable to those obtained in previous studies. The inconsistent findings for PFOS and PFOA in relation to AGD could be due to different mechanisms of action, as observed for other hormone related endpoints. Future analyses will be presented at the conference, evaluating a larger sample of 200 children participating in NewGeneris-Spain and will allow us evaluate the association of AGD with PFOS/PFOA.

## References:

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- (2) Fei C, McLaughlin JK, Tarone RE, Olsen J: Fetal growth indicators and prefluorinated chemicals: a study in the Danish National Birth Cohort. *American Journal of Epidemiology*. 2008.
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